

# **BIOLOGICALMICROSCPE**

## **XSP SERIES**

### **INSTRUCTIONS**

This instruction manual is for the Biological Microscope XSP series.To ensurs the safety and obtain optimum performance and to familiarize yourself fully with use of this microscope,we recommend that you study this manual thoroughly before operating the microscope.Retain this instruction manual in an easily accessible place near the work desk for future reference.

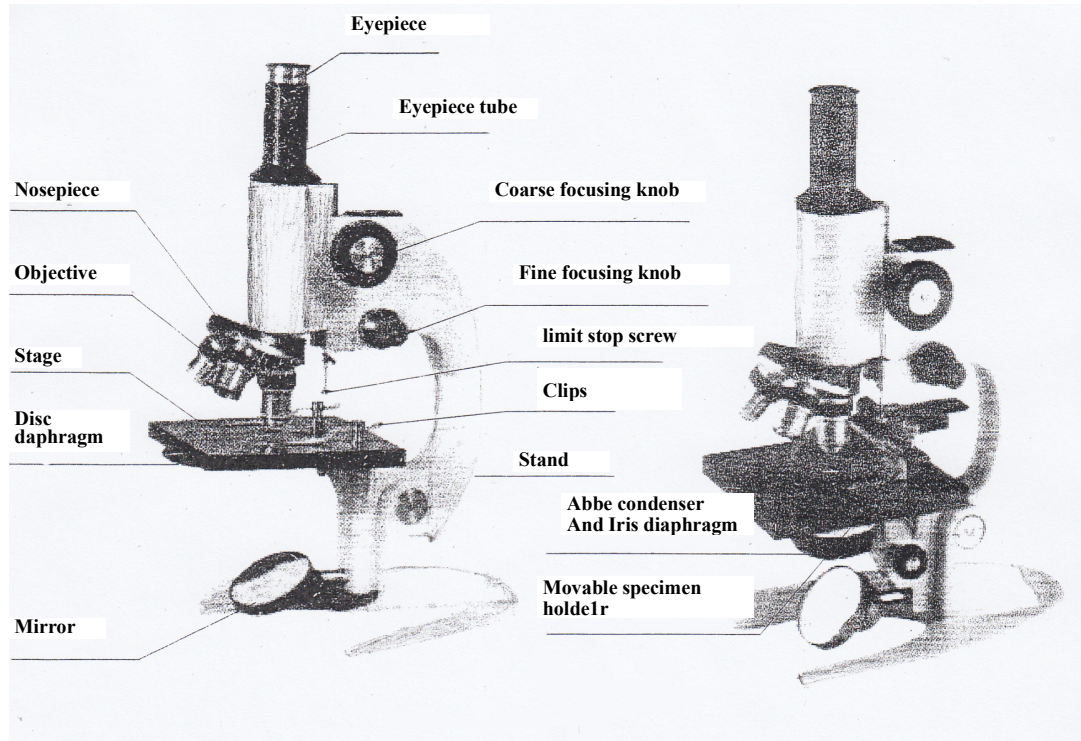
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**1、 Operation**

- (1) As the microscope is a precision instrument, always handle it with care, avoiding impact or abrupt movement during transportation.
- (2) Do not let the microscope emerge in the sun directly. Keep it in a dry and clean place. Avoid high temperature and acute shake. Following environment is required: Indoor temperature:0°C~40°C , Max relative humidity:85%
- (3) Avoiding impact the definition of the image, do not leave feculence and fingerprints on lens surfaces.
- (4) Before using, examine to ensure the power supply is consistent with the rating voltage.

**2、 Maintenance**

- (1) All glass surfaces must always be kept clean. Fine dust on the optical surface should be blown off by means of a hand blower or gently wiped off with a soft lens tissue. Carefully wipe off oil or fingerprints on the lens surfaces with tissue moistened with a small amount of 3:7 mixture of alcohol and ether.
- (2) Do not use organic solution to wipe the surface of the other components. These parts, especially the plastic parts, should be cleaned with a neutral detergent.
- (3) Do not take down or assemble it yourself.
- (4) After use, cover the microscope with the dustcover provided, and keep it in a dry and clean place for preventing rust.



## **2. Operation**

## **XSP SERIES**

The microscope is housed in a molded Styrofoam container.

First take the container out of the carton ,and keep the container on its side. Open the container carefully and don't let the optical items drop down. avoiding them being damaged. Check carefully to ensure the arm and accessories are well.

Install the objective into the nosepiece from the lowest magnification to the highest, in a clockwise direction from the rear . Insert the eyepiece tube.

### ***2-1 Angle of observation***

Adjust the angle by one hand pressing the U base and the other hand pulling the stand to a comfortable position for observation.

### ***2-2 Set the specimen slide***

Place a specimen to be studied on a glass slide, and fix it by the slide-holders of the mechanical stage.

If we use the movable specimen holder, fix the specimen by slide-holders of the movable specimen holder. Adjust its position by the switch of the movable specimen holder .

### ***2-3 Set illumination***

For the microscope only with mirror, turn the mirror to get the field of view illuminated.

If we use the attachable light, first take down the mirror from the stand, then insert the attachable light and adjust it .

### ***2-4 Adjust focus***

Adjust the coarse-focusing-knob to bring the slide into focus. Then lock the limit-stop-screw to avoid impact damage between the objective and slide . Adjust the fine-focusing-knob to get the image clear.

### ***2-5 Adjust condenser***

For the microscope with Abbe condenser, turn the Abbe condenser up

Or down to get the image brightness suitable for observation.

**2-6 Adjust diaphragm**

For the microscope with disc diaphragm, turn the diaphragm to select a aperture to get the background brightness suitable.

**2-7 Choose the objective**

Turn the nosepiece to choose the objective. Objective selected should be set vertically right to the slide. Generally, first use the objective 4X to focus to reveal general structural image. Then use the high power objective to reveal smaller details.

**2-8 Change the lamp**

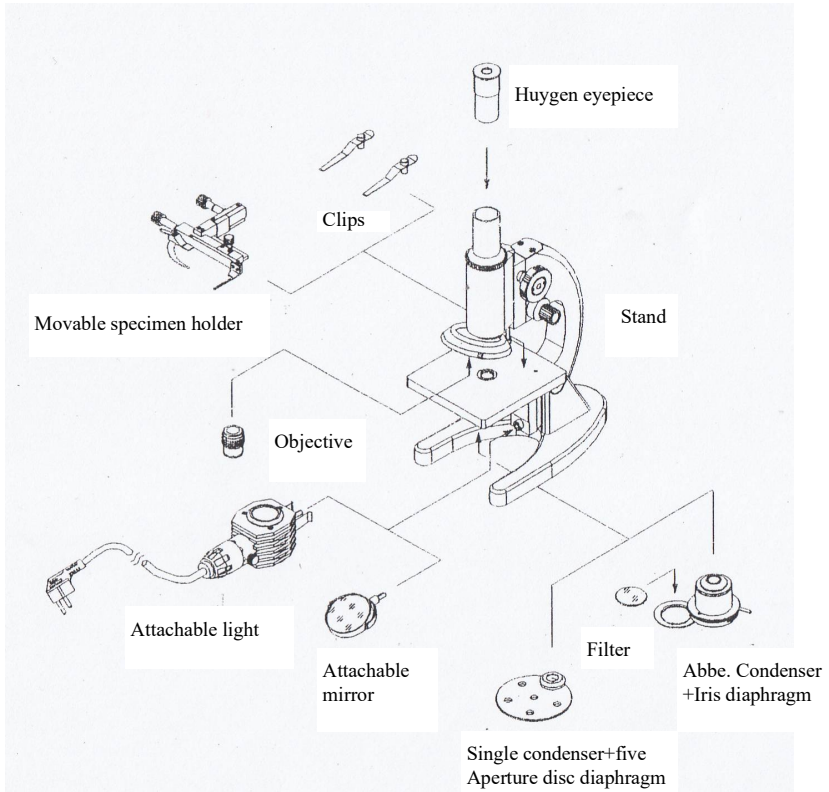
Before changing the lamp, first pull the plug out off the electrical socketk, then wait for a white until the lamp cools down to avoid being burnt.

### 3. General specifications

### XSP SERIES

XSP Series Biological Microscope General specifications(For option)

Install		Model				
Parts	Specifications	XSP-01	XSP-12	XSP-13A	XSP-06	XSP-L101
Huygens eyepiece	H5X			•		•
	H6X					
	H10X	•	•	•	•	•
	H12.5X	•		•		
	H15X					•
	H16X		•		•	
WF eyepiece	WF10X/18mm with pointer					
	WF10X/18mm with reticle					
	WF15X/13mm					
	WF20C/10mm					
185 objective	4X/0.10	•	•			5X
	10X/0.25	•	•	•	•	10X
	40XS/0.65	•	•	•	•	45X
	60XS/0.85					
	100XS/1.25(oil)			•	•	
Monocular Head		•	•	•	•	•
Stand	Metal base and stand	•	•	•	•	•
Nosepiece	Triple nosepiece	•	•	•	•	•
	Quadruple nosepiece					
Stage	110mm×120mm	•	•	•	•	•
Cilps		•	•			•
Movable Specimen Holder (60×30mm)	Black holder					
	White holder			•	•	
Condenser	Single NA0.65					
	Abbe.NA1.25			•	•	
Diaphragm	Five-aperture disc diaphragm	•	•			•
	Iris diaphragm			•	•	
Illumination	φ 50mm mirror	•	•	•	•	•
	Attachable light					
Bulb	115V/20W					
	230V/20W					
Filter	Blue/yellow/green			•	•	





**5-1 Objective**

Type	Magnification	Numerical Aperture (N.A)	Medium	Parfocal Distance (mm)	Magnification Market (color ring)
DIN achromatic objective 185mm	4X	0.10	air	35	Red
	10X	0.25	air	35	Yellow
	40X	0.65	air	35	Light blue
	60X	0.85	air	35	Deep blue
	100X	0.25	Cedar oil	35	White

**5-2 Eyepiece**

Type	Huygens				Wide field		
Magnification	5X/6X	10X	12.5X	15X/16X	10X	15X	20X
Field of view (mm)	φ	φ	φ	φ	φ	φ	φ

**5-3 Electrics**

The electrics are assembled according to customer's order. There are two kinds for option.

220V~240V power supply:220V~240V ± 10%, 50/60HZ

Lamp:230V/20W

The electrics have gained the CE and GS certification.

100V~120V power supply:100V~120V ± 10%, 50/60HZ

Lamp:115V/20W

The electrics have gained the UL certification.

**5-4 Parameter**

- (1)Total magnification: 20X~1600X
- (2)Field of view: φ 0.08mm~ φ 4.5mm
- (3)Mechanical tube length: 160 mm

(4)Object to primary image distance : 185mm

**5-5 Technical terms**

(1)Total magnification=(magnification of objective )×(magnification of eyepiece)

(2)Field of view=(line field of the eyepiece selected)÷(magnification of the objective selected)

(3) $N.A = n \sin \alpha$  (max), N. A. is very important parameter which marks the features of the objective and condenser. The “n” is the refractive index of the medium(air or immersion oil)between the cover glass of the objective and the specimen . The “ $\alpha$ ”is the half of the aperture angle. The N.A.is bigger, the resolution of the objective is higher.

(4)Object to primary image distance: the distance between the object plane to the primary image plane .The conjugate distance is fixed.

(5)Mechanical tube length: The distance between the objective shoulder and the ocular shoulder.

(6)the net weight is:1.5KGS,and the gross weight is:2.5KGS